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FOREST RESEARCH NEWS

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FOR THE MIDSOUTH

SOUTHERN FOREST EXPERIMENT STATION, FOREST SERVICE, U. S. DEPARTMENT OF AGRICULTURE

BUGS BITE BUGS



Monsters from Mars? Could be, but they're not. They're mites, magnified hundreds of times and photographed through a scanning electron microscope. A half dozen of these critters could fit on the head of a pin.

Mites are natural enemies of highly destructive pine bark beetles. At Pineville, Louisiana, Southern Forest Experiment Station scientist Dr. John C. Moser is studying the life cycles and habits of some species of mites in the hope of finding how they can aid in biological control of bark beetles. This method of control is desirable in minimizing use of chemicals in the woods.

The creature on the left is a new, yet unnamed species which feeds on nothing but bark beetle broods—the larvae, pupae, and eggs. It does not feed on adults, but rides them from tree to tree,

since mites have no wings for getting around on their own. This unnamed critter rides only a minor species of bark beetle found on the twigs and small branches of southern pine. But it feeds on broods of *any* type of bark beetle, including the notorious southern pine beetle.

The photograph at the right is *Pyemotes scolyti*, a mite with habits somewhat different from its cousin on the left. *P. scolyti* was brought from Delaware, Ohio, where it attacks the elm bark beetle, to see if it would eat the broods of southern pine beetles. It does. But it won't ride the adults of anything but members of the beetle genus *Scolytis*. The southern pine beetle belongs to a different genus—*Dendroctonus*.

The finicky feeding and transportation habits of these mites

provide a problem for entomologists attempting to improve forest environment through natural means. Moser said there are two approaches for researchers to consider. One is to see if forest environment can be modified in ways to help mites kill more beetles. The other is to learn if there are similar kinds of mites in other parts of the world that might supplement the work of mites already in southern forests. If so, perhaps they can be reared in large numbers and released in areas where natural mite populations have not built up to effective proportions. Either approach requires thorough study with highly specialized equipment.

The photos were made at the Forest Service's Forest Products Laboratory at Madison, Wisconsin, by Dr. Irving Sachs.

Arkansas Shows Growth

Forest industries in Arkansas used 42 percent more roundwood in 1968 than they did a decade ago. Softwood, mainly pine, accounted for two-thirds of the total. Saw logs and pulpwood were the leading products, with veneer logs third. Miscellaneous items such as poles, piling, posts, and cooperage made up 6 percent of the total.

These are some of the facts in a new report released by the Southern Forest Experiment Station of USDA's Forest Service. The station's Forest Survey project contacted all primary wood-using firms in Arkansas, together with outside plants using wood from the State.

The author of the report, Roy C. Beltz, predicts rapid growth and change for Arkansas' forest industry in the 1970's. New mills are being built, some employing new manufacturing techniques. Harvesting methods are changing, and some old-line companies are being absorbed by relative newcomers.

Saw logs accounted for more than half the roundwood harvested from Arkansas forests in 1968. Some cypress and cedar logs were cut, but pine made up most of the volume. More than 90 percent of the softwood saw logs came from southwest Arkansas.

Pulpwood bolts were the second largest item, increasing 47 percent since the previous survey of 1958. Most of the gain was in hardwoods, which are being used increasingly by the pulp industry.

Veneer logs ranked third and constituted nearly 10 percent of the harvest. Ten years ago all the veneer produced in Arkansas

was hardwood. In 1968 more than 90 percent was softwood—a reversal caused by development of the southern pine plywood industry, according to Beltz. Four southern pine plywood plants operate in the State, with a fifth due to open this year.

Forest industries in Arkansas excel in converting into salable products slabs, shavings, and even sawdust accumulated when logs are sawn into lumber. However, there is still considerable room for improvement, Beltz said, adding that the first place to reduce waste is in the woods. New harvesting machinery and techniques are reaching the State and are expected to increase efficiency, he said. Tree-felling shears and tree-length logging, for example, minimize the waste in stumps and tops.

Detailed information about Arkansas' timber output and forest industry will be found in the new report, Resource Bulletin SO-21, available on request from the Southern Forest Experiment Station, T-10210 Federal Building, 701 Loyola Avenue, New Orleans, Louisiana 70113. The Arkansas State Forestry Commission and the University of Arkansas Agricultural Extension Service cooperated in the survey.

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Termite Control Survives Flooding

Chemicals applied to the soil under houses to keep out subterranean termites are not washed away by floodwaters like those accompanying Hurricane Camille.

Virgil K. Smith, Entomologist at the Southern Station's Gulfport laboratory, has sampled soil from under and around homes in Mississippi and Louisiana. He reported that the termite-preventing chemicals had not been washed away by the floodwaters.

However, he said there are several situations where retreatment may be necessary. These are: (1) where severe erosion made it necessary to replace soil under and around the building, (2) where mud, sand, or debris covered the treated soil under buildings, (3) where new buildings are placed on old or new foundations on the original site, and (4) where additions to the building require altered foundations, pipe laying, or other work that disturbs the soil.

Owners of slab-on-ground houses should check the perimeter of their buildings. They need not worry about the treated soil under the slab, since the concrete probably protected it. They should remove leaves, limbs, boards, and other debris from around the foundations. If heavy deposits of mud and sand are present, a reliable termite control operator should re-treat the soil.

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There are 1,026 developed recreation sites in the 13-State Southern Region of the USDA Forest Service.

Weed or Hardwood Seedling?



Poison-ivy



Green ash



Boxelder

Looks like poison-ivy? Could be green ash. Or boxelder. How can you tell? By the shape of the leaves? Not necessarily.

Leaves of young hardwood seedlings often look quite different from leaves on an adult tree.

To help landowners, foresters, and naturalists identify first-year seedlings of some important trees and shrubs, the Southern Forest Experiment Station of USDA's Forest Service has published a guidebook. The manual illustrates leaves, stems, buds, and cotyledons (first leaves from a sprouting seed) of 76 trees and shrubs growing in the lower Mississippi Valley and similar environments of the South. Southern Station researchers feel the ability to identify young seedlings is especially

important in forecasting the kinds of useful or weed vegetation that may develop in forest lands.

Included in the manual are tree species growing in uplands and bottom lands, plus several nontree species whose seedlings are easily confused with those of commercial trees. Tables describe and compare leaves, stems, and buds of the ashes, elms, hickories, and red and white oaks. Seedlings within these species are often difficult to separate.

Louis C. Maisenhelder is author of the guide. Entitled "*Identifying Juvenile Seedlings in Southern Hardwood Forests*," it is Forest Service Research Paper SO-47, available on request from the Southern Station, 701 Loyola Avenue, New Orleans, Louisiana 70113.



Could be an exotic forest fern. But it's not. It is a 1-year-old bald-cypress seedling.



Infrared photo of water tupelo forests along the Tensow River in Alabama shows protection from the forest tent caterpillar provided by ultra-low-volume spray. Light area in center of river bend is foliage where trees were sprayed. Dark area around it indicates trees unprotected by spray and stripped of their leaves. Undamaged trees along riverbanks are species not affected by caterpillars. No wildlife was affected by the ultra-low-volume spray.

New Protection From Caterpillars

To protect valuable Alabama and Louisiana forests of water tupelo and sweetgum from forest tent caterpillars which strip off their leaves is the goal of Southern Forest Experiment Station scientists. And they want to do it without any harm to fish and wildlife.

Carefully controlled tests made this spring show promise, according to Robert C. Morris, entomologist at the Southern Station's Hardwoods Laboratory at Stoneville, Mississippi. Ultra-low-volume, nonpersistent insecticides were sprayed from the air, and indications are good that they may provide protection and replace objectionable chemicals.

The tests were made north of Mobile, Alabama, in water tupelo forests that have been heavily infested with caterpillars for several years. Trees on 42,000 acres were stripped of leaves in 1969, a fourfold increase since 1967. More than three and a half million acres are vulnerable. After defoliation by the caterpillars, tree growth slows down, seed crops are reduced,

some branches die. Repeated defoliation may kill the trees.

"Sportsmen and many residents of the area were unaware of the extensive damage to water tupelo forests because they had only seen the trees along the riverbanks, and these trees are of species not affected—sycamore, red maple, and cypress," Morris said. "It was a real surprise for people to go back from the banks about 200 feet and find the sky open up because all the tree tops had been stripped of their leaves." Aerial photos show the extent of this defoliation.

Tests Have Approval

The Forest Service tests were approved by all the interested Federal agencies, including the Environmental Quality Council and the Water Pollution Control Commission, as well as the Alabama Department of Public Health, the Alabama Conservation Department and its Game and Fish Division, and the Alabama Forestry Commission.



These are fully grown forest tent caterpillars, about 2 inches long, that have eaten tree leaves and are resting before changing to moths. Such caterpillars infested 42,000 acres of water tupelo forests in 1969, a fourfold increase since 1967.

The ultra-low-volume spray method utilizes the newer organophosphate and carbamate insecticides which have a short residual life and break down to harmless materials that do not pollute the environment. Twelve ounces of the formula contain only 0.36 pound of insecticide that is spread over 1 acre of forest—1 square foot receives only 8 millionths of a pound.

The low-volume sprays are dispersed from an airplane equipped with a pressurized system that develops a very fine mist. Minute droplets of insecticide fall on the leaves and branches and on the insects infesting them. The droplets persist for about 5 days. Caterpillars consume them as they feed on the leaves.

Extreme Care Exercised

Entomologists watched the trees carefully during the spring to see when the caterpillars were ready to hatch, then ordered spraying when it would do the most good. They were also careful to spray at a time when damage to the natural enemies of caterpillars would be minimized.

The area was checked about 5 days after the spraying, then every 2 weeks until the caterpillars had finished eating in May. Sprayed and unsprayed foliage was gathered for study in the laboratory. Aerial photographs were made of the spray plots and adjacent areas before and after spraying and at the end of the caterpillars' larval feeding period. These pictures seem to provide visual evidence of the control possible by this new approach. There has been no evidence of damage to fish or wildlife.



A few hundred feet back from the riverbank the sky opens up where tree tops have been denuded by forest tent caterpillars.

ATLAS PUBLISHED

A new full-color "Forest Atlas of the South" presents up-to-date reference material on 12 southeastern States.

Recognizing the South as an important forest region with a wide range of climate, vegetation, soil, and topography, the atlas is designed for land managers, research workers, students, and others whose concern is to increase the usefulness and beauty of these lands.

Included are maps of land resource areas, soils, forest types, distribution of southern pines and hardwoods, National and State forest lands, weather conditions, water availability, insect infestations, and fire occurrence rates.

Prepared by the Southeastern Forest Experiment Station at Asheville, North Carolina, and the Southern Forest Experiment Station, 701 Loyola Ave., New Orleans, Louisiana, the 28-page atlas is available on request.

Whitaker Receives National Award

Genetic Two-Step



Employees at the Alexandria Forestry Center feted Louie B. Whitaker with a cake when he returned from Washington with a Superior Service Award for his research in range management.

Louie B. Whitaker, range technician at the Southern Station's Forestry Center at Alexandria, Louisiana, received a Superior Service Honor Award "for unique contributions to research advancement in cattle range management."

J. Field Campbell, Under-Secretary of Agriculture, presented the award on the Washington Monument Grounds in Washington, D. C., on May 19. He cited Whitaker's ability in coordinating resource use on pine forest lands of the South with stockmen and landowners. "His relationships with cattlemen and forest managers who participate in experimental activities have accounted, to a large measure, for acquiring and maintaining resources needed to pursue research," he said. "This rapport has also facilitated disseminating research results to potential users."

Whitaker began his forestry work on the Kisatchie National Forest 36 years ago. He has been with the Southern Station since 1948.

FILMS AVAILABLE

Talk about improving man's environment and concern for ecology may be new in some circles, but the USDA Forest Service has been doing something about it for several decades.

Color, sound films describing aspects of the many Forest Service activities are available on loan without charge to schools, civic groups,

churches, and television stations.

A catalog listing with a brief description of more than 50 such films, varying in length from 4 minutes to half an hour, is available from the Southern Forest Experiment Station in New Orleans. A film library is maintained at the Southern Region office, USDA Forest Service, 1720 Peachtree Road NW, Atlanta, Georgia 30309, and films are available there.

A genetic two-step, consisting of relaxed and intensive selection, appears to be the best way to develop superior sycamore trees in the lower Mississippi Valley.

At least Southern Forest Experiment Station geneticists Dan Schmitt and James Wilcox reached this conclusion after studying three natural stands that consisted mainly of sycamores.

In relaxed selection, one searches in natural stands for trees that appear to be better than average in straightness, form class, diameter, and height. Once such trees have been located, their progeny can be established in seedling seed orchards and the same criteria applied to weed out all but the very best. Pruning ability, degree of epicormic branching, and frequency and angle of branching are also considered in this intensive second selection.

Drs. Schmitt and Wilcox say that the patterns of variation and the scarcity of suitable natural stands make the intensive method unsatisfactory. Differences between trees in crown characters and form class are often influenced as much by competition as by genetic variation.

A detailed report of their findings is available in Research Note SO-91 from the Southern Station in New Orleans.

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More than 250,000 people visited recreation areas on National Forests in the South during the Memorial Day weekend, Regional Forester T. A. Schlapfer said.

WHAT KIND OF FLOORING

What kind of flooring will you choose? Composition tile, hardwood, wall-to-wall carpeting?

Initial installation cost, annual maintenance cost, and total long-term cost will no doubt be considered when you make your choice.

Most of the information that has been available until now has been manufacturers' claims, and these may be conflicting. But now a prospective buyer has a basis for making objective comparisons. It is the published result of a study by the Northeastern Forest Experiment Station to obtain unbiased information about various flooring materials used under residential conditions.

Apartment building owners, managers, and tenants in nine cities were contacted for information about their buildings, selected to represent standardized units in different sections of the country as nearly as possible.

Data dealt with only the living room area and were evaluated from the standpoint of the homeowner in a single family dwelling. Later reports will deal with bedroom and dining room areas and comparisons between rooms.

From all information available, hardwood flooring (block and strip) has the lowest annual maintenance cost and lowest long-term cost.

Composition tile had the lowest average installation cost—\$35 per 100 square feet—and an average wear life of 17.7 years. Hardwood flooring had the highest average installation cost—

\$60 per 100 square feet—but had a total wear life of more than 50 years. Carpet had an installation cost close to that of hardwood—\$58.61 per 100 square feet—but had the lowest average wear life, 7.5 years.

Ten tables give detailed information from which the prospective buyer can make his own comparisons to determine the flooring material that suits him best.

Copies of the report may be obtained from the Northeastern Forest Experiment Station, Upper Darby, Pennsylvania 19082. Ask for Research Paper NE-124, "Flooring costs—a comparison of installation and maintenance costs for three types of residential flooring."

COLOR IT GREEN WITH TREES

More and more people in all walks of life are becoming sensitive to the need for trees in their environment.

Trees planted around homes and along streets provide shade and screening, cushion noise, soften the stark lines of buildings, and add beauty to places that otherwise would be cold and functional.

For trees to do their job satisfactorily, they must be selected carefully, then watched over until they become established. To help in selecting the right tree for a given situation, the U. S. Department of Agriculture has published Home and Garden Bulletin 117, called "Trees for Shade and Beauty."

The 8-page pamphlet, part of USDA's "Beautification Begins

at Home" series, gives pointers in selecting trees and diagrams planting instructions. Directions for fertilizing, mulching, watering, and pruning are included. Copies may be obtained from the Southern Forest Experiment Station in New Orleans, Louisiana 70113.

CALL OF THE WILD?

New Booklet May Have Answers

Vacationists yearning for the primitive life will find a new USDA Forest Service booklet appealing. It is called "Search for Solitude."

Thirty-three pages of full-color pictures and text describe Primitive and Wilderness Areas scattered through the National Forests. As wild and free as ever are 9,925,952 acres of wilderness in 60 areas held in trust by the Forest Service for the use, enjoyment, and spiritual enrichment of the American people. Another 4,363,954 acres in 28 Primitive Areas are being reviewed under provisions of the 1964 Wilderness Act to determine whether they should be included in the Wilderness System.

In the booklet wilderness areas are mapped and described in detail for campers who want to "rough it" without forest roads, resorts, piped water, grill for cooking, or table for eating. Guided only by a map and compass, travellers can visit land untrammelled by man, maintained by the Forest Service to retain its primeval influence and character.

Copies of the new booklet are available from the Southern Station in New Orleans.

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